MEFP Configuration Guide

Data Ingest Components

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1 Overview

This guide provides instructions for configuring CHPS workflows to: (1) ingest gridded forecasts into MEFP and (2) generate MEFP forecast ensembles.

This guide assumes that MEFP has been installed as part of a CHPS release, as described in the *OHD-Core Install Notes,* and the user is modifying an SA for development and testing. Adding the MEFP data ingest components requires adding and updating FEWS configuration files and using the FEWS GUI to verify the configuration is successful.

Standard settings are provided, but additional optional settings are also included. Section 5 includes instructions for configuring MEFP to run with a T0 other than the MEFP default of 12Z.

For more information on MEFP or HEFS, see the *HEFS Software Getting Started Manual*.

1.1 *Notation*

Within this document, the following notation is used:

- All graphical interface components are **Capitalized and in Bold**.
- All XML snippets are in this font.
- All command line entries are in this font.
- All important terms defined in the Section 1.2, Terminology, are *italicized*.

1.2 *Terminology*

- *configuration standalone*: The standalone in which the MEFP data ingest components will be configured, setup in Section 1.4.
- *configuration forecast group* –or– *fgroup*: The forecast group determined in Step 1.4. It will be denoted <*fgroup*> below when used in the name of a directory or file, except when referred to within a snippet of XML, in which case it will be referred to as *fgroup*; this is to avoid confusion with other uses of '<' and '>' in the XML syntax.
- *configuration segment*: The id of the first segment for which MEFP is to execute, identified in Step 1.4.
- *configuration catchments*: The locationIds of all of the catchments for which MEFP must generate ensembles of FMAP and FMAT, identified in Step 1.4.

1.3 *Directories of Note*

The following directories will be referred to in the instructions provided below:

- <*region_dir*>: The standalone region home directory, typically "##rfc_sa".
- <*configuration_dir*>: The standalone Config directory, typically <*region_dir*>/Config.

- <*import_dir*>: The standalone Import directory, typically <*region_dir*>/Import.
- <*mefp_root_dir*>: The standalone mefpRootDir directory, typically <*region_dir*>/Models/hefs/mefpRootDir.

Files under the Config, Import, and mefpRootDir directories will be modified.

Additional directories important to the automated downloading of operational gridded forecast files are listed in Section 2.6.1.

1.4 *Configuration Steps*

1. Create a *standalone* for initial configuration of the MEFP data ingest components. Changes made here may be ported to an OC for synchronization to the central server, but only after configuration is successful on a standalone.

2. Identify the following:

   a. The first forecast segment for which HEFS forecasts are to be generated. For simplicity, this should be a head-water segment. This is referred to as the *configuration segment*.

   b. The CHPS locationId for all catchments in that segment which MEFP will need to generate forecast ensembles of FMAP and FMAT. These are referred to as the *configuration catchments*.

   c. The name of the forecast group containing that segment, referred to as the *configuration forecast group*. This name should match that used in the names of other forecast group-specific configuration files, such as pre-processing configuration files. For example, at ABRFC, "WKANSAS" is a forecast group and is used in the name of all Merge modules, such as WKANSAS_MergeMAP, included in the WKANSAS_PreProcessing workflows.

      This directory will be referred to as "<FGroup>" below.

Instructions below will be based upon the segment, catchments, and group identified here. Instructions for extrapolating to other segments, catchments, and groups will be provided.

1.5 *Affected Files*

The diagram in Figure 1 summarizes all files created or modified by the configuration steps provided in this document. The directory structure shown includes all directories affected by any HEFS component. Files with a light red background are general across all RFCs, while those with a light blue background are specific to each RFC and require editing.

Figure 1: Files created or modified during configuration.

2 Configuring MEFP Data Ingest Components

This section provides instructions for the following:

- Setting up needed directories
- Making needed additions and changes to configuration files
- Verifying the MEFP data ingest components in the standalone
- Synchronizing those changes with the central server
- Setting up automated download of forecast grid files from HTTP server and SBN
- Scheduling the import workflows to run automatically
- Confirming that the automated download from the HTTP server, SBN and scheduled workflows ran successfully

By the end of this section, all data flows necessary for the MEFP to execute will be put in place and verified.

In all sections that follow, changes that must be made to allow for additional segments and forecast groups to be added will be marked by the following: **TO ADD NEW SEGMENT** or **FORECAST GROUP**. The list of those tasks will be summarized in Section 3.

2.1 *Create <mefp_root_dir> (Required)*

Action: Select a directory to host the MEFP root directory. This directory will store two types of files:

- 30 days of CFSv2 spatially-interpolated, location-specific time series files (PI-timeseries XML or FastInfoset format)

  Note: CFSv2 configuration instructions are provided below, but use of CFSv2 forecasts in MEFP is no longer recommended. If you do not use CFSv2, ignore any CFSv2 instructions.

- MEFP location-specific and data type-specific (precipitation and temperature) parameter files. The disk will need to be able to store about 30 MB per MEFP forecast location.

In the AWIPS environment, there are several choices for placing top-level data directories, /awips/chps_share, /awips/chps_local, and /awips/chps_data. For <mefp_root_dir>, /awips/chps_share is the recommended directory.

Here are guidelines to follow when deciding on a standard data path in AWIPS:

- Is the data used by the OC/SA?

    - Does the data need to be "shared" between multiple users? (i.e. If one user creates a few files, do all other users need to be using those generated files rather than their own?)
        - **Yes:** /awips/chps_share
        - **No:** /awips/chps_local
    - Does the data change frequently, and is it a large amount of data?
        - **Yes:** /awips/chps_local, /chps, or /tmp
        - **No:** /awips/chps_share
- Is the data generated by the FSS or PI service?
    - Use /awips/chps_data/fromCHPS
- Is the data read by the FSS or PI service?
    - Use /awips/chps_data/toCHPS

Generally, users will be infrequently running MEFP, datasets are going to be static (or mostly static with an update here and there), and the shared storage path works just fine. If a user will be frequently running MEFP processes, this might impact the use of other users' OC/SA's due to a high network load, and a user should consider a local path.

If you are running EnsPost in HEFS, similar considerations for the placement of the ensPostRootDir apply.

2.2 *Modify Global Properties (Required)*

Action: Modify the global properties file:

<*region_dir*>/sa_global.properties

Add the following properties:

```
MEFP_ROOT_DIR=<mefp_root_dir>
IMPORT_FOLDER_CFSv2=$IMPORT_FOLDER_ROOT$/CFSv2
IMPORT_FOLDER_GEFS=$IMPORT_FOLDER_ROOT$/GEFS
```

2.3 *Configuration File Changes (All Steps Required)*

Described in the following sections are changes that must be made to the configuration files to setup the MEFP data ingest.

2.3.1 Move and Modify Files Added in Step Error! Reference source not found.: FGroup files

Action: Rename the FGroup directory and its contents to use the *configuration forecast group* name identified in Step 1.4 instead of "FGroup". The *configuration forecast group* is denoted below as <*fgroup*>:

```
cd <configuration_dir>/ModuleConfigFiles/hefs
mv FGroup <fgroup>
cd <fgroup>
mv FGroup_MEFP_CFSv2_Export.xml  <fgroup>_MEFP_CFSv2_Export.xml
```

Action: Modify all of the files within the just created directory <*configuration_dir*>/ModuleConfigFiles/hefs/<*fgroup*> as follows:

Replace ALL instances of "FGroup" with the configuration forecast group name, <*fgroup*>

The following file must be modified:

<*fgroup*>_MEFP_CFSv2_Export.xml

This modification will affect all locationSetId elements used within the module configuration file (i.e., it affects all location sets referred to in the configuration file).

Upon completion, no reference to "FGroup" should exist in any directory name or XML file under <*configuration_dir*>/ModuleConfigFiles/hefs.

Description: Certain model adapters must be executed by forecast group due to memory limitations. The files provided with the configuration serve as a template.

TO ADD A NEW FORECAST GROUP

The actions above must be performed to add a new forecast group with the following changes:

1. Do a cp instead of mv in the first **Action** above (skip the directory move), and the file to be copied is the <*fgroup*>_MEFP_CFSv2_Export.xml file while the target file has the same name except that it starts with the name of the new forecast group.
2. Do the same replacement in the second **Action** above, but do the replacement in the just created file, replacing the original <*fgroup*> with the name of the new forecast group.

2.3.2 **Modify File Added in Step** Error! Reference source not found.**: M EFP_CFSv2_Export.xml**

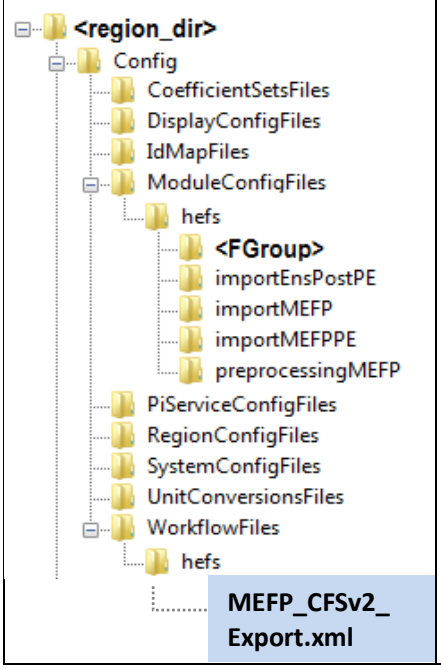
Action: Modify the workflow file for exporting CFSv2 time series files

<*configuration_dir*>/WorkflowFiles/hefs/MEFP_CFSv2_Export.xml

Replace "FGroup" with the name of the configuration forecast group, <*fgroup*>. See the example below for how the file should appear after making changes (the affected line is in **bold**).

Description: This workflow is executed to create CFSv2 time series files by location under the <*mefp_root_dir*>/cfsv2Interpolated directory. It must include one module execution per forecast group.

TO ADD A NEW FORECAST GROUP
After creating a new export module in Step 2.3.1, add an activity XML element to call that module in this workflow.

Standard Location: <*configuration_dir*>**/WorkflowFiles/hefs/**	**Contents:** ***MEFP_CFSv2_Export.xml***
	<?xml version="1.0" encoding="UTF-8"?> <workflow xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://chps1/schemas/workflow.xsd" version="1.1"> <!-- The modules below export the CFSv2 files one group at a time. Add one entry per forecast group. NOTE: Group specific exporting is required due to memory limitations in how a general adapter run is handled. --> <activity> <runIndependent>true</runIndependent> **<moduleInstanceId>*fgroup*_MEFP_CFSv2_Export</moduleInstanceId>** </activity> </workflow>

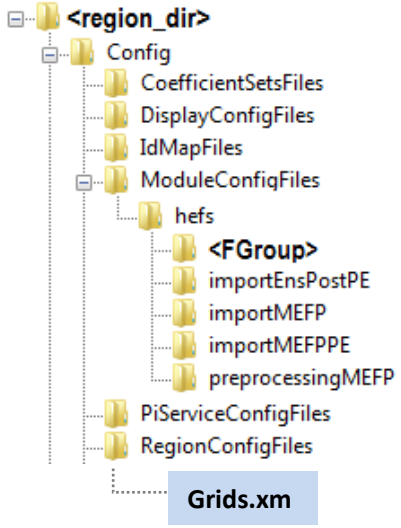
2.3.3 Modify Existing File: Grids.xml

Action: Define grids for the GEFS and CFSv2 files in the file

<*configuration_dir*>/RegionConfigFiles/Grids.xml

See the example below for the exact text to add immediately before the closing "</grids>" at the end of the file.

Description: MEFP allows for GEFS and CFSv2 to be used as forecast sources. Each provides forecasts in the form of GRIB2 files. For CHPS to ingest those files, appropriate grids must be defined, as is done in this step.

Standard Location: <*configuration_dir*>**/RegionConfigFiles/**	**Contents:** ***Grids.xml***
	<?xml version="1.0" encoding="UTF-8"?> <grids xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://chps1/schemas/grids.xsd"> … **<!-- ADDED FOR MEFP DATA INGEST ========== -->** **<regular locationId="HEFS_CFSv2_USA">** **<description>grid def. for imported CFSv2 data</description>** **<rows>38</rows>** **<columns>92</columns>** **<geoDatum>WGS 1984</geoDatum>** **<firstCellCenter>** **<x>-130.3125</x>** **<y>55.275311</y>** **<z>0</z>** **</firstCellCenter>** **<xCellSize>0.9375</xCellSize>** **<yCellSize>0.944877</yCellSize>** **</regular>** **<regular locationId="HEFS_CFSv2">** **<description>grid def. for imported CFSv2 data</description>** **<rows>190</rows>** **<columns>384</columns>** **<geoDatum>WGS 1984</geoDatum>** **<firstCellCenter>** **<x>0.0</x>** **<y>89.290860</y>** **<z>0</z>** **</firstCellCenter>** **<xCellSize>0.9375</xCellSize>** **<yCellSize>0.944877</yCellSize>** **</regular>** **<regular locationId="HEFS_GEFS_USA">** **<description>grid def. for imported HEFS GEFS data</description>** **<rows>27</rows>** **<columns>76</columns>** **<geoDatum>WGS 1984</geoDatum>**

Standard Location: <*configuration_dir*>**/RegionConfigFiles/**	**Contents:** ***Grids.xml***
	<firstCellCenter> <x>-131</x> <y>56</y> <z>0</z> </firstCellCenter> <xCellSize>1.0</xCellSize> <yCellSize>1.0</yCellSize> </regular> <regular locationId="HEFS_GEFS"> <description>grid def. for imported HEFS GEFS data</description> <rows>181</rows> <columns>360</columns> <geoDatum>WGS 1984</geoDatum> <firstCellCenter> <x>0</x> <y>90.0</y> <z>0</z> </firstCellCenter> <xCellSize>1.0</xCellSize> <yCellSize>1.0</yCellSize> </regular> <!-- END MEFP DATA INGEST ========== --> </grids>

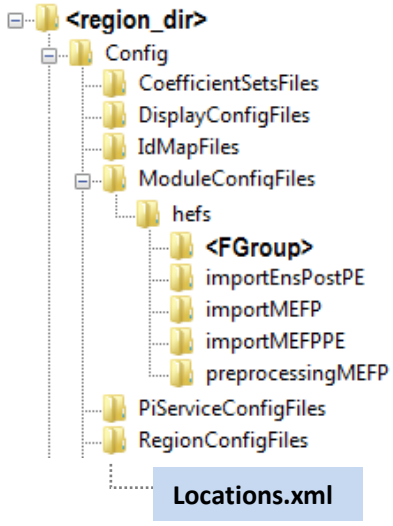
2.3.4 Modify Existing File: Locations.xml

Action: Define locations used to import GEFS and CFSv2 grids in the file

<*configuration_dir*>/RegionConfigFiles/Locations.xml

See the example below for the exact text to add immediately before the closing "</locations>" at the end of the file.

Description: In order to import and interpolate gridded data in CHPS for GEFS and CFSv2, these locations must be defined.

Standard Location: <*configuration_dir*>**/RegionConfigFiles/**	**Contents:** ***Locations.xml***
	<?xml version="1.0" encoding="UTF-8"?> <locations version="1.1" xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://chps1/schemas/locations.xsd"> … **<!-- ADDED FOR MEFP DATA INGEST ========== -->** **<location id="HEFS_CFSv2" name="CFSv2 Location">** **<description> HEFS_CFSv2</description>** **<shortName> HEFS_CFSv2</shortName>** **<x>0</x>** **<y>0</y>** **</location>** **<location id="HEFS_CFSv2_USA" name="CFSv2_USA Location">** **<description> HEFS_CFSv2_USA </description>** **<shortName> HEFS_CFSv2_USA </shortName>** **<x>0</x>** **<y>0</y>** **</location>** **<location id="HEFS_GEFS" name="GEFS Location">** **<description> HEFS_GEFS</description>** **<shortName> HEFS_GEFS</shortName>** **<x>0</x>** **<y>0</y>** **</location>** **<location id="HEFS_GEFS_USA" name="GEFS_USA Location">** **<description> HEFS_GEFS_USA </description>** **<shortName> HEFS_GEFS_USA </shortName>** **<x>0</x>** **<y>0</y>** **</location>** **<!-- END MEFP DATA INGEST ========== -->** </locations>

2.3.5 Modify Existing File: LocationSets.xml

Action: Define the following three location sets:

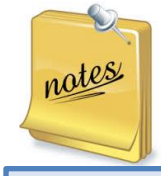
- Catchments_HEFS_<*fgroup*>: All catchments for which MEFP must execute for the forecast group.
- Catchments_HEFS: All catchments for which MEFP must execute over the entire RFC; this is typically constructed by including the Catchments_HEFS_<*fgroup*> location sets for all forecast groups, such as the one in the previous bullet.
- Catchments_HEFS_<*fgroup*>_Export: The catchments for which CFSv2 location-specific time series files must be exported. By making this a different location set from the first one above, it allows for CFSv2 time series to be exported, and an archive built up, before the forecast group or catchments are used in executing MEFP.

Add them to this file:

<*configuration_dir*>/RegionConfigFiles/LocationSets.xml

See the example below for text to use replacing *fgroup* with the name of the *configuration forecast group* and *catchmentId#* with the *configuration catchments* (one line must be added per catchment). The XML should be added before the closing "</locationSets>" at the end of the file.

Description: The Catchments_HEFS_* location sets specify locations where we spatially interpolate time series and export CFSv2 time series files.

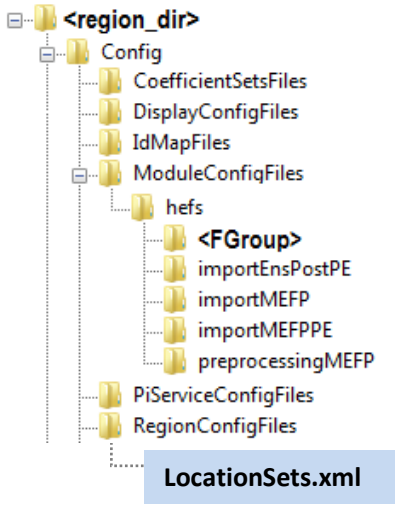


All catchments defined in one of these location sets must be included in the file <*configuration_dir*>/RegionConfigFiles/Locations.xml with appropriate coordinates.

TO ADD NEW SEGMENTS AND FORECAST GROUPS

Identify the segments to add, their catchments, and forecast groups. Then do the following:

1. To add additional segments for an existing forecast group, add the corresponding catchment ids for each segment to the location sets Catchment_HEFS_*fgroup* and Catchments_HEFS_*fgroup*_Export.
2. To add additional forecast groups, add appropriate locations sets Catchments_HEFS_*newgroup* and Catchments_HEFS_*newgroup*_Export, where *newgroup* is the name of the new forecast group. The contents of those location sets must be set to include all appropriate catchments. Then add the location set Catchments_HEFS_*newgroup* to the Catchments_HEFS location set.

Standard Location: <*configuration_dir*>**/RegionConfigFiles/**	**Contents:** ***LocationSets.xml***
	<?xml version="1.0" encoding="UTF-8"?> <locationSets version="1.1" xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://chps1/schemas/locationSets.xsd"> … **<!-- ADDED FOR MEFP DATA INGEST ========================== -->** **<!-- Define forecast group specific catchments for HEFS. Some adapters must be run for each group separately to avoid memory issues. -->** **<locationSet id="Catchments_HEFS_*fgroup*">** **<locationId>*catchmentId1*</locationId>** **<locationId>*catchmentId2*</locationId>** … **</locationSet>** **<!-- Build a full list from the forecast group specific. -->** **<locationSet id="Catchments_HEFS">** **<locationSetId>Catchments_HEFS_*fgroup*</locationSetId>** **</locationSet>** **<!-- Define forecast group specific catchments for exporting CFSv2 time series to location specific files.-->** **<locationSet id="Catchments_HEFS_*fgroup*_Export">** **<locationId>*catchmentId1*</locationId>** **<locationId>*catchmentId2*</locationId>** … **</locationSet>** **<!-- END MEFP DATA INGEST ======================== -->** </locationSets>

2.3.6 Modify Existing File: ModuleInstanceDescriptors.xml

Action: Define new module instance descriptors in the file

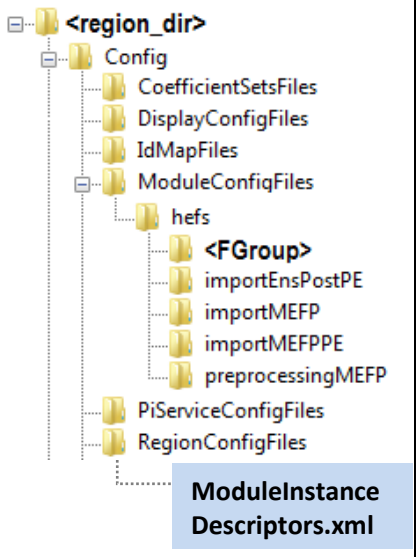
<*configuration_dir*>/RegionConfigFiles/ModuleInstanceDescriptors.xml

See the example below for text to add immediately before the closing "</moduleInstanceDescriptors>" at the end of the file, replacing *fgroup* with the name of the *configuration forecast group*.

Description: The added modules are used to import the gridded GEFS and CFSv2 data and export the CFSv2 time series files.

TO ADD A NEW FORECAST GROUP

After creating the *newgroup*_MEFP_CFSv2_Export.xml module configuration file for the new forecast group (Section 2.3.1), to the ModuleInstanceDescriptors.xml file, add a copy of the existing descriptor for the module *fgroup*_MEFP_CFSv2_Export, and change *fgroup* to the name of the new forecast group.

Standard Location: <*configuration_dir*>**/RegionConfigFiles/**	**Contents:** ***ModuleInstanceDescriptors.xml***
	<?xml version="1.0" encoding="UTF-8"?> <moduleInstanceDescriptors xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://chps1/schemas/moduleInstanceDescriptors.xsd" version="1.0"> … **<!-- ADDED FOR MEFP DATA INGEST ========================== -->** **<!-- Import and Interpolate Grids for MEFP. -->** **<!-- Import modules -->** **<moduleInstanceDescriptor id="ImportMEFP_CFSv2_FMAP">** **<description>Imports CFSv2 Grib Precip Forecasts</description>** **<moduleId>TimeSeriesImportRun</moduleId>** **</moduleInstanceDescriptor>** **<moduleInstanceDescriptor id="ImportMEFP_CFSv2_TMIN">** **<description>Imports CFSv2 Grib Tmin Forecasts</description>** **<moduleId>TimeSeriesImportRun</moduleId>** **</moduleInstanceDescriptor>** **<moduleInstanceDescriptor id="ImportMEFP_CFSv2_TMAX">** **<description>Imports CFSv2 Grib Tmax Forecasts</description>** **<moduleId>TimeSeriesImportRun</moduleId>** **</moduleInstanceDescriptor>** **<moduleInstanceDescriptor id="ImportMEFP_GEFS">** **<description>Imports GEFS Grib2 Forecasts</description>** **<moduleId>TimeSeriesImportRun</moduleId>** **</moduleInstanceDescriptor>** **<!-- Interpolate grids to the USA grid. -->** **<moduleInstanceDescriptor id="MEFP_CFSv2_Interpolate_USA">**

Standard Location: <*configuration_dir*>**/RegionConfigFiles/**	**Contents:** ***ModuleInstanceDescriptors.xml***

```
      <moduleId>Interpolation</moduleId>
   </moduleInstanceDescriptor>
   <moduleInstanceDescriptor id="MEFP_GEFS_Interpolate_USA">
      <moduleId>Interpolation</moduleId>
   </moduleInstanceDescriptor>

   <!—Modules associated with exporting CFSv2 time series files. -->
   <!—Interpolate CFSv2 grids by location. -->
   <moduleInstanceDescriptor
      id="MEFP_CFSv2_Interpolate_Location_FMAP">
      <moduleId>TransformationModule</moduleId>
   </moduleInstanceDescriptor>
   <moduleInstanceDescriptor
      id="MEFP_CFSv2_Interpolate_Location_TFMX">
      <moduleId>TransformationModule</moduleId>
   </moduleInstanceDescriptor>
   <moduleInstanceDescriptor
      id="MEFP_CFSv2_Interpolate_Location_TFMN">
      <moduleId>TransformationModule</moduleId>
   </moduleInstanceDescriptor>

   <!—Export CFSv2 time series files. -->
   <moduleInstanceDescriptor id="fgroup_MEFP_CFSv2_Export">
      <moduleId>GeneralAdapter</moduleId>
   </moduleInstanceDescriptor>

   <!-- END MEFP DATA INGEST ======================== -->
</moduleInstanceDescriptors>
```

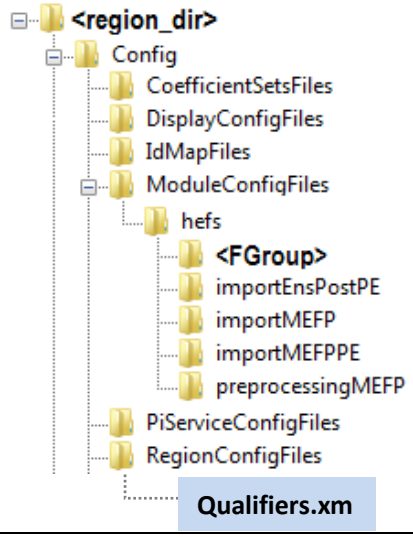
2.3.7 Modify Existing File: Qualifiers.xml

Action: If not already present, add the allowReferencingUndefinedQualifiers XML element with a value of true as the first element within the qualifiers XML element inside this file:

<*configuration_dir*>/RegionConfigFiles/Qualifiers.xml

See the example below for exact text to add **immediately after the "<qualifiers>" at the top of the file (it must be the first element after it)**. Note that the allowReferencingUndefinedQualifiers line is wrapped in the text shown below; it should be on one line in the XML file

Description: Qualifiers are used to distinguish time series in some modules. It is simplest to setup this flag to allow for referencing undefined qualifiers instead of defining all used qualifiers.

Standard Location: <*configuration_dir*>**/RegionConfigFiles/**	**Contents:** ***Qualifiers.xml***
	<?xml version="1.0" encoding="UTF-8"?> <qualifiers xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://chps1/schemas/qualifiers.xsd"> **<!-- ADDED FOR MEFP DATA INGEST ========================== -->** **<allowReferencingUndefinedQualifiers>true</allowReferencingUndefinedQualifiers>** **<!-- END MEFP DATA INGEST ======================== -->** … </qualifiers>

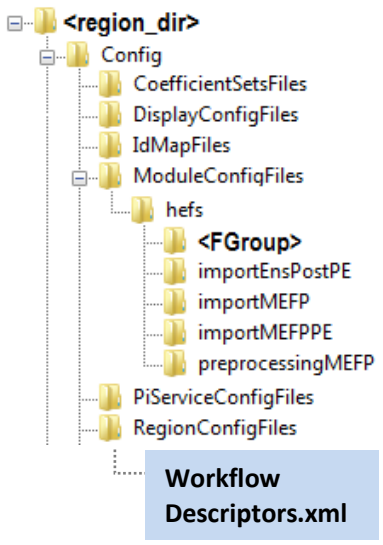
2.3.8 Modify Existing File: WorkflowDescriptors.xml

Action: Define new workflow descriptors in the file

<*configuration_dir*>/RegionConfigFiles/WorkflowDescriptors.xml

See the example below for text to add immediately before the closing "</workflowDescriptors>" at the end of the file.

Description: The added workflows are used to import the gridded GEFS and CFSv2 data and export the CFSv2 time series files.

Standard Location: <*configuration_dir*>**/RegionConfigFiles/**	**Contents:** ***WorkflowDescriptors.xml***
	<?xml version="1.0" encoding="UTF-8"?> <workflowDescriptors xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://chps1/schemas/workflowDescriptors.xsd" version="1.0"> … **<!-- ADDED FOR MEFP DATA INGEST ========== -->** **<!-- MEFP-specific operational imports -->** **<workflowDescriptor id="ImportMEFP-CFSv2Grids" forecast="false"** **visible="true" name="ImportMEFP-CFSv2Grids" allowApprove="false">** **<description>Import CFSv2 grids for MEFP from the Import directory and delete the files after importing</description>** **<runExpiryTime unit="hour" multiplier="12"/>** **</workflowDescriptor>** **<workflowDescriptor id="ImportMEFP-GEFSGrids" forecast="false"** **visible="true" name="ImportMEFP-GEFSGrids" allowApprove="false">** **<description>Import GEFS grids for MEFP the Import directory and delete the files after importing</description>** **<runExpiryTime unit="hour" multiplier="12"/>** **</workflowDescriptor>** **<!-- MEFP-specific workflows -->** **<workflowDescriptor id="MEFP_CFSv2_Export" forecast="false"** **visible="false" name="MEFP_CFSv2_Export" allowApprove="false">** **<description>Export location interpolated CFSv2 time series for use in lagged ensemble construction.</description>** **<runExpiryTime unit="hour" multiplier="12"/>** **</workflowDescriptor>** **<!-- END MEFP DATA INGEST ========== -->** </workflowDescriptors>

2.3.9 Modify Existing File: SpatialDisplay.xml

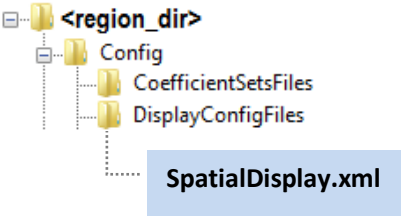
Action: Define new spatial displays in the file

<*configuration_dir*>/DisplayConfigFiles/SpatialDisplay.xml

See the example below for exact text to add immediately before the closing "</gridDisplay>" at the end of the file (some lines of XML are long so that it spans multiple lines in the text below

Description: Add selections in the **Spatial Display Panel** of the CHPS interface that allow for viewing the GEFS ensemble mean, and CFSv2 gridded forecasts of precipitation and temperature.

The grid scale and colors specified in the XML classBreaks elements was copied from an ABRFC configuration. Modify as desired for your RFC.

Standard Location: <*configuration_dir*>**/DisplayConfigFiles/**	**Contents:** ***SpatialDisplay.xml***
	<?xml version="1.0" encoding="UTF-8"?> <gridDisplay xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://chps1/schemas/gridDisplay.xsd"> … **<!-- ADDED FOR MEFP DATA INGEST ========== -->** **<!-- MEFP GEFS ensemble mean plots. -->** **<gridPlotGroup id="MEFP" name="MEFP GEFS">** **<gridPlot id="Precip">** **<timeSeriesSet>** **<moduleInstanceId>MEFP_GEFS_Interpolate_USA</moduleInstanceId>** **<valueType>grid</valueType>** **<parameterId>FMAP</parameterId>** **<locationId>HEFS_GEFS_USA</locationId>** **<timeSeriesType>external forecasting</timeSeriesType>** **<timeStep unit="hour" multiplier="6"/>** **<relativeViewPeriod unit="day" start="0" end="16"/>** **<readWriteMode>read complete forecast</readWriteMode>** **</timeSeriesSet>** **<movingAccumulationTimeSpan unit="hour" multiplier="3"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="6"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="12"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="24"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="48"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="120"/>** **<classBreaks>** **<color color="gray60" opaquenessPercentage="50" lowerValue="0"** **label="Zero"/>** **<color opaquenessPercentage="80" lowerValue="0.00001"**

Standard Location: <*configuration_dir*>/**DisplayConfigFiles/**	**Contents:** ***SpatialDisplay.xml***
	color="0402CC" label="Trace"/> <color opaquenessPercentage="80" lowerValue="0.001" color="1C92FC" label="0 to 0.01"/> <color opaquenessPercentage="80" lowerValue="0.01" color="04FEFC" label="0.01 to 0.1"/> <color opaquenessPercentage="80" lowerValue="0.1" color="046604" label="0.1 to 0.2"/> <color opaquenessPercentage="80" lowerValue="0.2" color="04FE04" label="0.2 to 0.3"/> <color opaquenessPercentage="80" lowerValue="0.3" color="ACFE2C" label="0.3 to 0.4"/> <color opaquenessPercentage="80" lowerValue="0.4" color="FCFE04" label="0.4 to 0.5"/> <color opaquenessPercentage="80" lowerValue="0.5" color="ECCA04" label="0.5 to 0.75"/> <color opaquenessPercentage="80" lowerValue="0.75" color="FC7E04" label="0.75 to 1"/> <color opaquenessPercentage="80" lowerValue="1" color="FC0204" label="1 to 1.25"/> <color opaquenessPercentage="80" lowerValue="1.25" color="CC0204" label="1.25 to 1.5"/> <color opaquenessPercentage="80" lowerValue="1.50" color="8C0204" label="1.5 to 1.75"/> <color opaquenessPercentage="80" lowerValue="1.75" color="FC02FC" label="1.75 to 2"/> <color opaquenessPercentage="80" lowerValue="2" color="9C32CC" label="2 to 2.5"/> <color opaquenessPercentage="80" lowerValue="2.5" color="541ACC" label="2.5 to 3"/> <color opaquenessPercentage="80" lowerValue="3" color="B1B8C8" label="Above 3 Inches"/> </classBreaks> </gridPlot> <gridPlot id="Temperature Max"> <timeSeriesSet> <moduleInstanceId>MEFP_GEFS_Interpolate_USA</moduleInstanceId> <valueType>grid</valueType> <parameterId>TFMX</parameterId> <locationId>HEFS_GEFS_USA</locationId> <timeSeriesType>external forecasting</timeSeriesType> <timeStep unit="hour" multiplier="6"/> <relativeViewPeriod unit="day" start="0" end="16"/> <readWriteMode>read complete forecast</readWriteMode> </timeSeriesSet> <movingAccumulationTimeSpan unit="hour" multiplier="3"/> <movingAccumulationTimeSpan unit="hour" multiplier="6"/> <movingAccumulationTimeSpan unit="hour" multiplier="12"/> <movingAccumulationTimeSpan unit="hour" multiplier="24"/> <movingAccumulationTimeSpan unit="hour" multiplier="48"/> <movingAccumulationTimeSpan unit="hour" multiplier="120"/> <classBreaks> <lowerColor>blue3</lowerColor> <upperColor>light blue1</upperColor>

Standard Location: <*configuration_dir*>/**DisplayConfigFiles/**	**Contents:** ***SpatialDisplay.xml***

```
            <lowerValue>-15</lowerValue>
            <lowerValue>15</lowerValue>
            <lowerValue>25</lowerValue>
            <lowerValue>32</lowerValue>
            <lowerColor>pale green1</lowerColor>
            <upperColor>red</upperColor>
            <lowerValue>32.1</lowerValue>
            <lowerValue>40</lowerValue>
            <lowerValue>50</lowerValue>
            <lowerValue>60</lowerValue>
            <lowerValue>70</lowerValue>
            <lowerValue>80</lowerValue>
            <lowerValue>90</lowerValue>
          </classBreaks>
        </gridPlot>
        <gridPlot id="Temperature Min">
          <timeSeriesSet>

<moduleInstanceId>MEFP_GEFS_Interpolate_USA</moduleInstanceId>
            <valueType>grid</valueType>
            <parameterId>TFMN</parameterId>
            <locationId>HEFS_GEFS_USA</locationId>
            <timeSeriesType>external forecasting</timeSeriesType>
            <timeStep unit="hour" multiplier="6"/>
            <relativeViewPeriod unit="day" start="0" end="16"/>
            <readWriteMode>read complete forecast</readWriteMode>
          </timeSeriesSet>
          <movingAccumulationTimeSpan unit="hour" multiplier="3"/>
          <movingAccumulationTimeSpan unit="hour" multiplier="6"/>
          <movingAccumulationTimeSpan unit="hour" multiplier="12"/>
          <movingAccumulationTimeSpan unit="hour" multiplier="24"/>
          <movingAccumulationTimeSpan unit="hour" multiplier="48"/>
          <movingAccumulationTimeSpan unit="hour" multiplier="120"/>
          <classBreaks>
            <lowerColor>blue3</lowerColor>
            <upperColor>light blue1</upperColor>
            <lowerValue>-15</lowerValue>
            <lowerValue>15</lowerValue>
            <lowerValue>25</lowerValue>
            <lowerValue>32</lowerValue>
            <lowerColor>pale green1</lowerColor>
            <upperColor>red</upperColor>
            <lowerValue>32.1</lowerValue>
            <lowerValue>40</lowerValue>
            <lowerValue>50</lowerValue>
            <lowerValue>60</lowerValue>
            <lowerValue>70</lowerValue>
            <lowerValue>80</lowerValue>
            <lowerValue>90</lowerValue>
          </classBreaks>
        </gridPlot>
      </gridPlotGroup>
      <!--  MEFP CFSv2 single-valued forecast plots. -->
      <gridPlotGroup id="MEFP" name="MEFP CFSv2">
```

Standard Location: <*configuration_dir*>/**DisplayConfigFiles/**	**Contents:** ***SpatialDisplay.xml***
	<gridPlot id="Precip"> **<timeSeriesSet>** **<moduleInstanceId>MEFP_CFSv2_Interpolate_USA</moduleInstanceId>** **<valueType>grid</valueType>** **<parameterId>FMAP</parameterId>** **<locationId>HEFS_CFSv2_USA</locationId>** **<timeSeriesType>external forecasting</timeSeriesType>** **<timeStep unit="hour" multiplier="6"/>** **<relativeViewPeriod unit="day" start="0" end="330"/>** **<readWriteMode>read complete forecast</readWriteMode>** **</timeSeriesSet>** **<movingAccumulationTimeSpan unit="hour" multiplier="3"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="6"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="12"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="24"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="48"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="120"/>** **<classBreaks>** **<color color="gray60" opaquenessPercentage="50" lowerValue="0" label="Zero"/>** **<color opaquenessPercentage="80" lowerValue="0.00001" color="0402CC" label="Trace"/>** **<color opaquenessPercentage="80" lowerValue="0.001" color="1C92FC" label="0 to 0.01"/>** **<color opaquenessPercentage="80" lowerValue="0.01" color="04FEFC" label="0.01 to 0.1"/>** **<color opaquenessPercentage="80" lowerValue="0.1" color="046604" label="0.1 to 0.2"/>** **<color opaquenessPercentage="80" lowerValue="0.2" color="04FE04" label="0.2 to 0.3"/>** **<color opaquenessPercentage="80" lowerValue="0.3" color="ACFE2C" label="0.3 to 0.4"/>** **<color opaquenessPercentage="80" lowerValue="0.4" color="FCFE04" label="0.4 to 0.5"/>** **<color opaquenessPercentage="80" lowerValue="0.5" color="ECCA04" label="0.5 to 0.75"/>** **<color opaquenessPercentage="80" lowerValue="0.75" color="FC7E04" label="0.75 to 1"/>** **<color opaquenessPercentage="80" lowerValue="1" color="FC0204" label="1 to 1.25"/>** **<color opaquenessPercentage="80" lowerValue="1.25" color="CC0204" label="1.25 to 1.5"/>** **<color opaquenessPercentage="80" lowerValue="1.50" color="8C0204" label="1.5 to 1.75"/>** **<color opaquenessPercentage="80" lowerValue="1.75" color="FC02FC" label="1.75 to 2"/>** **<color opaquenessPercentage="80" lowerValue="2" color="9C32CC" label="2 to 2.5"/>** **<color opaquenessPercentage="80" lowerValue="2.5" color="541ACC" label="2.5 to 3"/>** **<color opaquenessPercentage="80" lowerValue="3" color="B1B8C8" label="Above 3 Inches"/>** **</classBreaks>**

Standard Location: <*configuration_dir*>**/DisplayConfigFiles/**	**Contents:** ***SpatialDisplay.xml***
	</gridPlot> **<gridPlot id="Temperature Max">** **<timeSeriesSet>** **<moduleInstanceId>MEFP_CFSv2_Interpolate_USA</moduleInstanceId>** **<valueType>grid</valueType>** **<parameterId>TFMX</parameterId>** **<locationId>HEFS_CFSv2_USA</locationId>** **<timeSeriesType>external forecasting</timeSeriesType>** **<timeStep unit="hour" multiplier="6"/>** **<relativeViewPeriod unit="day" start="0" end="330"/>** **<readWriteMode>read complete forecast</readWriteMode>** **</timeSeriesSet>** **<movingAccumulationTimeSpan unit="hour" multiplier="3"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="6"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="12"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="24"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="48"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="120"/>** **<classBreaks>** **<lowerColor>blue3</lowerColor>** **<upperColor>light blue1</upperColor>** **<lowerValue>-15</lowerValue>** **<lowerValue>15</lowerValue>** **<lowerValue>25</lowerValue>** **<lowerValue>32</lowerValue>** **<lowerColor>pale green1</lowerColor>** **<upperColor>red</upperColor>** **<lowerValue>32.1</lowerValue>** **<lowerValue>40</lowerValue>** **<lowerValue>50</lowerValue>** **<lowerValue>60</lowerValue>** **<lowerValue>70</lowerValue>** **<lowerValue>80</lowerValue>** **<lowerValue>90</lowerValue>** **</classBreaks>** **</gridPlot>** **<gridPlot id="Temperature Min">** **<timeSeriesSet>** **<moduleInstanceId>MEFP_CFSv2_Interpolate_USA</moduleInstanceId>** **<valueType>grid</valueType>** **<parameterId>TFMN</parameterId>** **<locationId>HEFS_CFSv2_USA</locationId>** **<timeSeriesType>external forecasting</timeSeriesType>** **<timeStep unit="hour" multiplier="6"/>** **<relativeViewPeriod unit="day" start="0" end="330"/>** **<readWriteMode>read complete forecast</readWriteMode>** **</timeSeriesSet>** **<movingAccumulationTimeSpan unit="hour" multiplier="3"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="6"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="12"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="24"/>** **<movingAccumulationTimeSpan unit="hour" multiplier="48"/>**

Standard Location: <*configuration_dir*>/**DisplayConfigFiles/**	**Contents:** ***SpatialDisplay.xml***
	<movingAccumulationTimeSpan unit="hour" multiplier="120"/> **<classBreaks>** **<lowerColor>blue3</lowerColor>** **<upperColor>light blue1</upperColor>** **<lowerValue>-15</lowerValue>** **<lowerValue>15</lowerValue>** **<lowerValue>25</lowerValue>** **<lowerValue>32</lowerValue>** **<lowerColor>pale green1</lowerColor>** **<upperColor>red</upperColor>** **<lowerValue>32.1</lowerValue>** **<lowerValue>40</lowerValue>** **<lowerValue>50</lowerValue>** **<lowerValue>60</lowerValue>** **<lowerValue>70</lowerValue>** **<lowerValue>80</lowerValue>** **<lowerValue>90</lowerValue>** **</classBreaks>** **</gridPlot>** **</gridPlotGroup>** **<!-- END MEFP DATA INGEST ========== -->** </gridDisplay>

2.4 *Confirm Configuration*

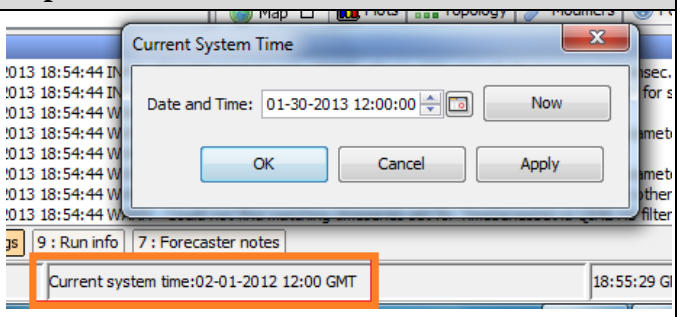
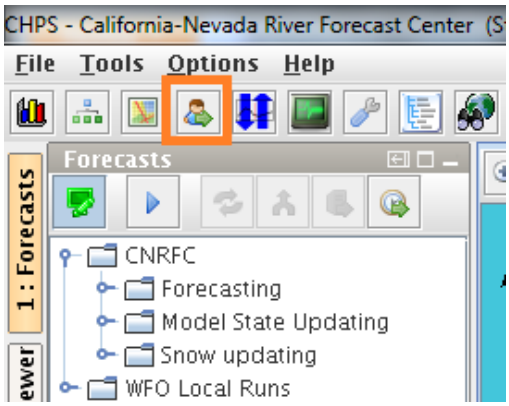
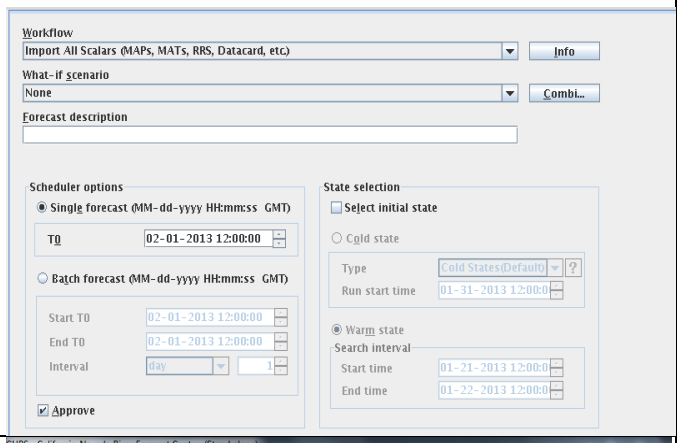
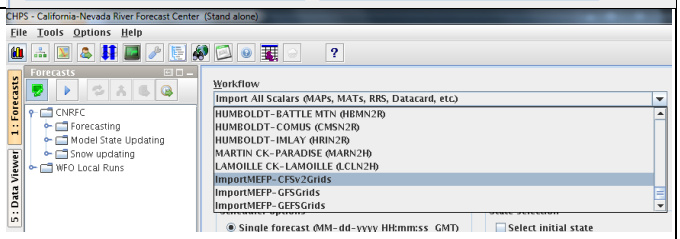
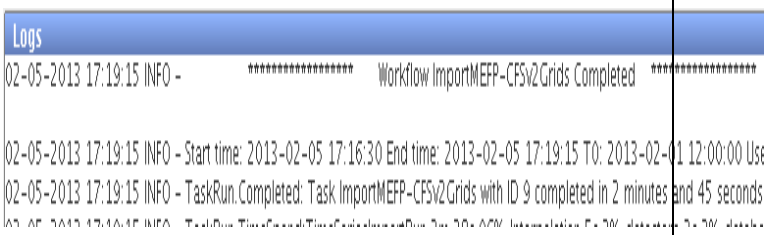
Described below are steps to perform to test that the configuration was successful. This test is designed to replicate exactly how the grid files will be imported when configured to run as an automated workflow. The example below shows the data which is available for an MEFP run on Jan 31, 2013 at 12Z, using version 10 of the GEFS (GEFSv10) and CFSv2. (If other forcing grids or other times are imported and used (e.g. the WPC), then those grid files should also be tested.) The grids are imported by system times (T0) as follows:

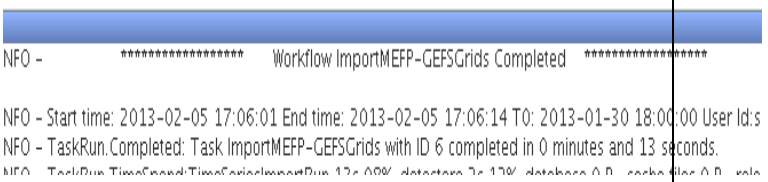
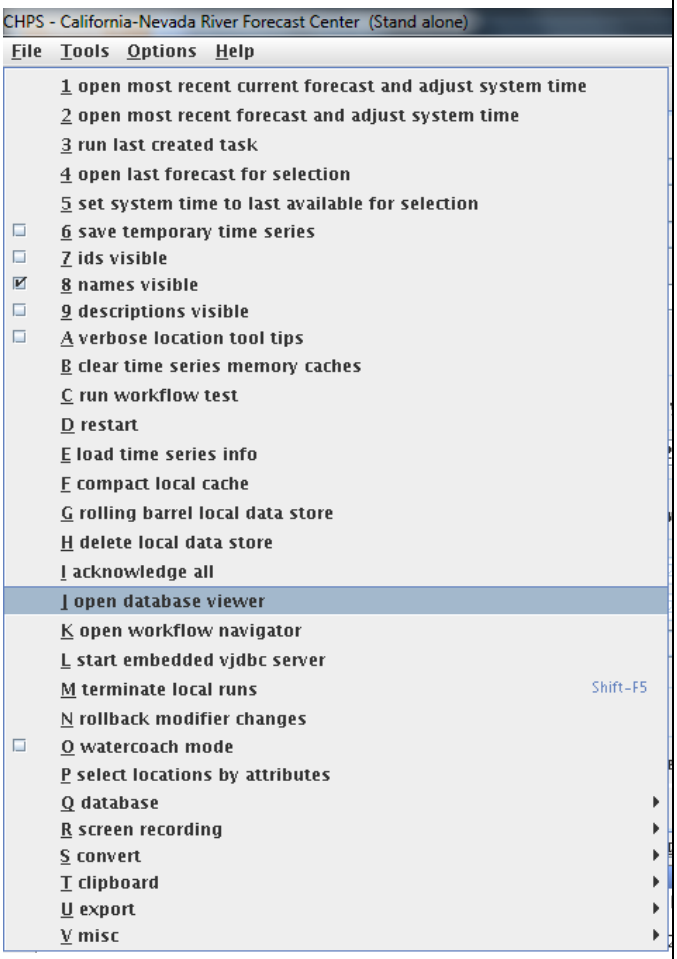
- GEFS: 1/31/13 00Z
- CFSv2: 1/30/13 12Z (the data is 24-hours old)

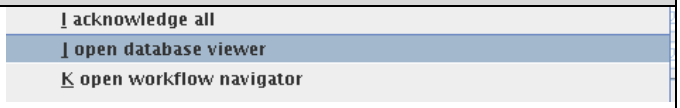
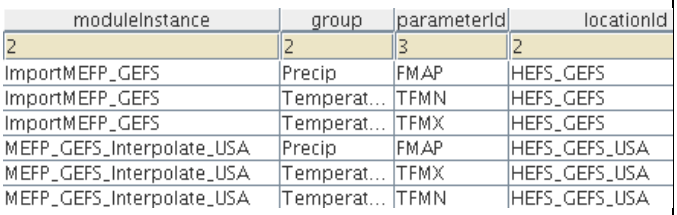
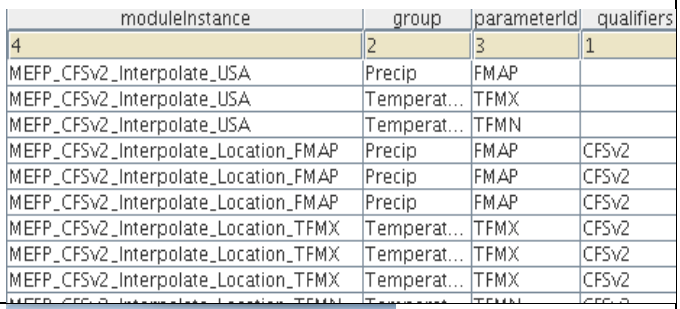
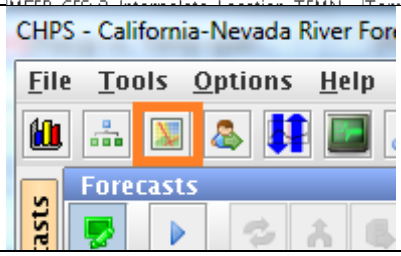
The test steps below describe how to view the gridded forecasts through the **Spatial Display Panel** of the CHPS interface.

Perform the following steps and confirm the expected results:

#	Action	Expected Results
0	Populate the <*region_dir*>/Import directory with grid data for testing. Do the following: Obtain the importTestData from: ftp://hydrology.nws.noaa.gov/pub/CHPS/MEFP_DataIngest_TestData/importTestData.tgz cd <*region_dir*> # The following is one line: tar –zxvf <*download_dir*>/dataIngest/importTestData.tgz –C .	The import directory will contain data designed to test the data ingest configuration for the system time (T0) set below.
1	Start FEWS using the configuration standalone: ***cd*** <*region_dir*> ***cd ..*** ***./ohdPlugins/fews_ohdPlugins.sh.rboff*** ***##rfc_sa &*** The *.rboff script is used for testing purposes.	FEWS will be started. The splash screen displayed will vary by RFC. The default splash screen is:  After a short time, the CHPS interface will open.

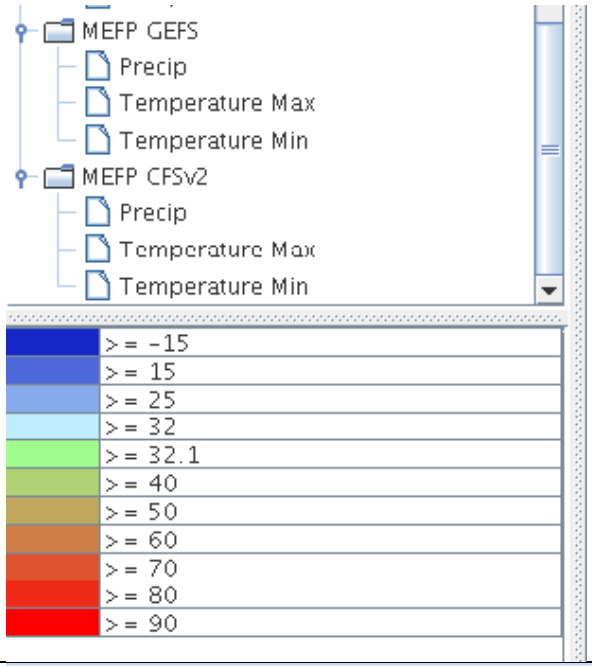
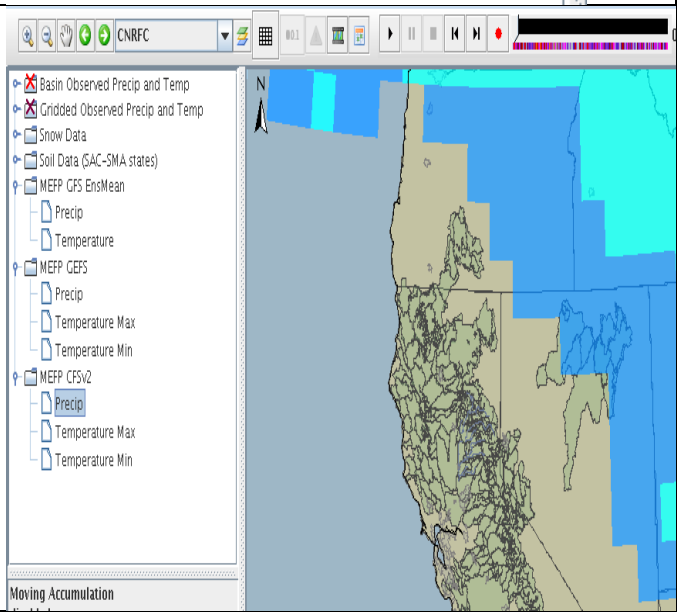
#	Action	Expected Results
2	Click on the **Current system time Label** at the bottom of the CHPS interface so that the **Current System Time** dialog opens. Set the system time to 01-30-2013 12:00:00.	
3	Click on **Manual Forecast Button**: 	The **Manual Forecast Panel** will open allowing you to select the workflow to run: 
4	In the **Workflow List**, select the ImportMEFP-CFSv2Grids workflow.	
5	Click **Run.**	
6	Wait for run to complete (up to 5 minutes)	The following will be displayed in the CHPS **Logs Panel**: 

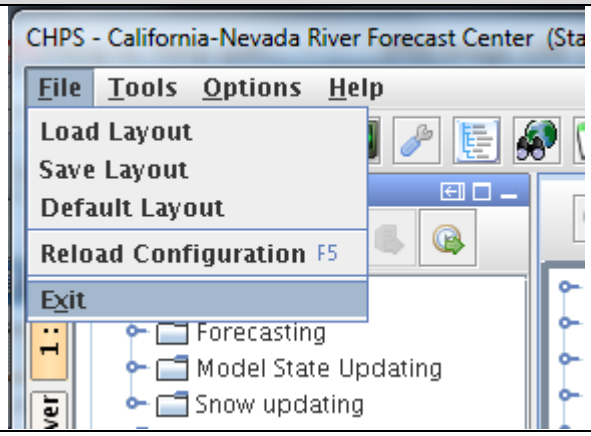
#	Action	Expected Results
7	Verify that appropriate directories and files for each *configuration catchment* were created under the directory <*mefp_root_dir*>/cfsv2Interpolated/archive.	If they were not created, then the module that exports the location-specific CFSv2 forecast time series file, or one of the preceding modules, failed to execute.
8	Perform Step 2, again, but set the system time to be 01-31-2013 00:00:00.	
9	In the **Workflow List**, select the ImportMEFP-GEFSGrids workflow.	
10	Click **Run.**	
11	Wait for run to complete (< 1 minute)	The following be displayed in the CHPS **Logs Panel**: 
12	Click on the **Logs Panel** (to make it active) and press the F12 key.	A menu will appear: 

#	Action	Expected Results
13	Select “open database viewer” (shortcut key: j).	
14	In the **Database Viewer Panel** that opens, select each workflow to verify there is data in the database.	Here is a snippet of the GEFS workflow:  Here is a snippet of the CFSV2 workflow: 
15	Click **Spatial Button** in the toolbar of the CHPS interface.	

moduleInstance	group	parameterId	locationId
2	2	3	2
ImportMEFP_GEFS	Precip	FMAP	HEFS_GEFS
ImportMEFP_GEFS	Temperat...	TFMN	HEFS_GEFS
ImportMEFP_GEFS	Temperat...	TFMX	HEFS_GEFS
MEFP_GEFS_Interpolate_USA	Precip	FMAP	HEFS_GEFS_USA
MEFP_GEFS_Interpolate_USA	Temperat...	TFMX	HEFS_GEFS_USA
MEFP_GEFS_Interpolate_USA	Temperat...	TFMN	HEFS_GEFS_USA

moduleInstance	group	parameterId	qualifiers
4	2	3	1
MEFP_CFSv2_Interpolate_USA	Precip	FMAP	
MEFP_CFSv2_Interpolate_USA	Temperat...	TFMX	
MEFP_CFSv2_Interpolate_USA	Temperat...	TFMN	
MEFP_CFSv2_Interpolate_Location_FMAP	Precip	FMAP	CFSv2
MEFP_CFSv2_Interpolate_Location_FMAP	Precip	FMAP	CFSv2
MEFP_CFSv2_Interpolate_Location_FMAP	Precip	FMAP	CFSv2
MEFP_CFSv2_Interpolate_Location_TFMX	Temperat...	TFMX	CFSv2
MEFP_CFSv2_Interpolate_Location_TFMX	Temperat...	TFMX	CFSv2
MEFP_CFSv2_Interpolate_Location_TFMX	Temperat...	TFMX	CFSv2

#	Action	Expected Results
16	When the **Spatial Display Panel** opens, in the on the left, expand the following: “MEFP GEFS” and “MEFP CFSv2”.	There should be no red X on any of the expanded nodes (a red X indicates missing data), which should appear as follows: 
17	Select each of the “Precip”, “Temperature”, and “Temperature Max/Min” nodes made visible in the last step and confirm that gridded data is displayed on the map to the right.	

#	Action	Expected Results
18	From the **File Menu**, select "Exit" to close the standalone.	

2.5 *Synchronize Changes to the Central Server (Required)*

First, the global properties have been modified in Section 2.2; these modifications must be made to the central server version of the global properties. Specifically each fss global property file needs to be modified. For each FSS##, open the following file for editing (replace ?? with the 2-letter RFC abbreviation):

/awips/chps_local/fss/??rfc/FSS##/FewsShell/??rfc/fss_global.properties

Add the following properties:

MEFP_ROOT_DIR=<*mefp_root_dir*>
IMPORT_FOLDER_CFSv2=$IMPORT_FOLDER_ROOT$/CFSv2
IMPORT_FOLDER_GEFS=$IMPORT_FOLDER_ROOT$/GEFS

Second, transfer all of the configuration changes made in earlier steps to the central server. Seven files were modified while all others were new; see Figure 1 in Section 1.5 for a list (files in blue boxes are modified and those in red boxes are new). Use the FEWS configuration manager (cm) tool for installing the files in the central server (i.e., place the changes in the FEWS OC, validate, and synchronize/upload the changes).

TO ADD NEW SEGMENTS OR FORECAST GROUPS
Repeat this synchronization step for any new created or modified files.

2.6 *Setup Acquisition of Operational Forecast Grids (All Steps Required)*

With the import workflows configured and synchronized with the central server, the next step is to setup automated acquisitions of GEFS and CFSv2 operational gridded forecasts. The GEFS and CFSv2 forecasts are acquired through SBN (alternatively also available from the NCEP NOMADs servers), they are contained in GRIB2 format files. The steps below describe how to install scripts that are delivered as part of this release and that perform the required download, configuration to acquire forecasts through SBN and how to schedule those scripts for automated execution on a cron. By default those scripts will run once per day for the GEFS and four times per day for the CFSv2.

2.6.1 Identify systems and directories

Identify the following directories and systems:

- <*http_system*>: The system on which the HTTP scripts will be executed. For example, “chps3-nhdr”.

- <*http_dir*>: The directory that will contain the HTTP scripts, generated log files, and the operational GEFS GRIB2 forecast files.
- <*cfsv2_dir*>: The directory that will contain the operational CFSv2 GRIB2 forecast files. By default this is going to be /data_store/cfs/.
- <*CHPS_import_system*>: The system on which the CHPS import workflows will be executed. For example, "chps3-nhdr".
- <*CHPS_import_dir*>: The import directory employed by scheduled import workflows. This should be a subdirectory of the directory pointed to by the global property IMPORT_FOLDER_ROOT used by scheduled workflows. For example, /awips/chps_data/toCHPS/nerfc/grib2/CFSv2.

2.6.2 Configure LDM to download CFSv2 files

1. Add the lines below to the bottom of the pqact.conf.xxx file on dx1 where xxx is your site ID. This file is located under /usr/local/ldm/etc/

```
#CFSv2 data for HEFS ^ZECZ98_KWBF  and ^ZTCZ98_KWBF
ANY      ^(Z.....) (KWBF) (..)(..)(..)
         FILE    -overwrite -log -close -
edex     /data_store/cfs/cfs.(\3:yyyy)(\3:mm)\3/\4/\7/time_grib_01\8/\(10)Z_\(
11)_\(12)-\1_\2_\3\4\5_(seq).\6.%Y%m%d%H
```

2. Run the script below to merge the changes to the pqact.conf file (xxx is your site ID):

```
/data/fxa/sdc/config_awips2.sh ldm xxx
```

3. Verify the changes to the pqact.conf file on cpsbn1

4. Restart LDM for the changes to take effect

2.6.3 Schedule HTTP download runs as cron jobs

Add the following lines to the cron for user fews on the system <*http_system*>. Please make sure user fews has the appropriate permissions to access the data. To avoid confusion with too many '>', the directories noted in Section 2.6.1 are shown in *<italics and red>*

00 04 * * * *<http_dir>*/scripts/cfs_data.sh 00 *<cfsv2_dir>* *<CHPS_import_system>* *<CHPS_import_dir>*/CFSv2 > *<http_dir>*/logs/cfs_00zdata.log

00 10 * * * *<http_dir>*/scripts/cfs_data.sh 06 *<cfsv2_dir>* *<CHPS_import_system>* *<CHPS_import_dir>*/CFSv2 > *<http_dir>*/logs/cfs_06zdata.log

00 16 * * * *<http_dir>*/scripts/cfs_data.sh 12 *<cfsv2_dir>* *<CHPS_import_system>* *<CHPS_import_dir>*/CFSv2 > *<http_dir>*/logs/cfs_12zdata.log

00 22 * * * *<http_dir>*/scripts/cfs_data.sh 18 *<cfsv2_dir>* *<CHPS_import_system>* *<CHPS_import_dir>*/CFSv2 > *<http_dir>*/logs/cfs_18zdata.log

00 08 * * * <*http_dir*>/scripts/gefs_data.sh 00 <*http_dir*>/GEFS <*CHPS_import_system*>
<*CHPS_import_dir*>/GEFS > <*http_dir*>/logs/gefs_00zdata.log

The data is currently grabbed from NCEP HTTP sites via the internet. You should use your existing mechanisms for bringing data from the internet onto your AWIPS machines (e.g. Local Data Acquisition and Dissemination (LDAD)).

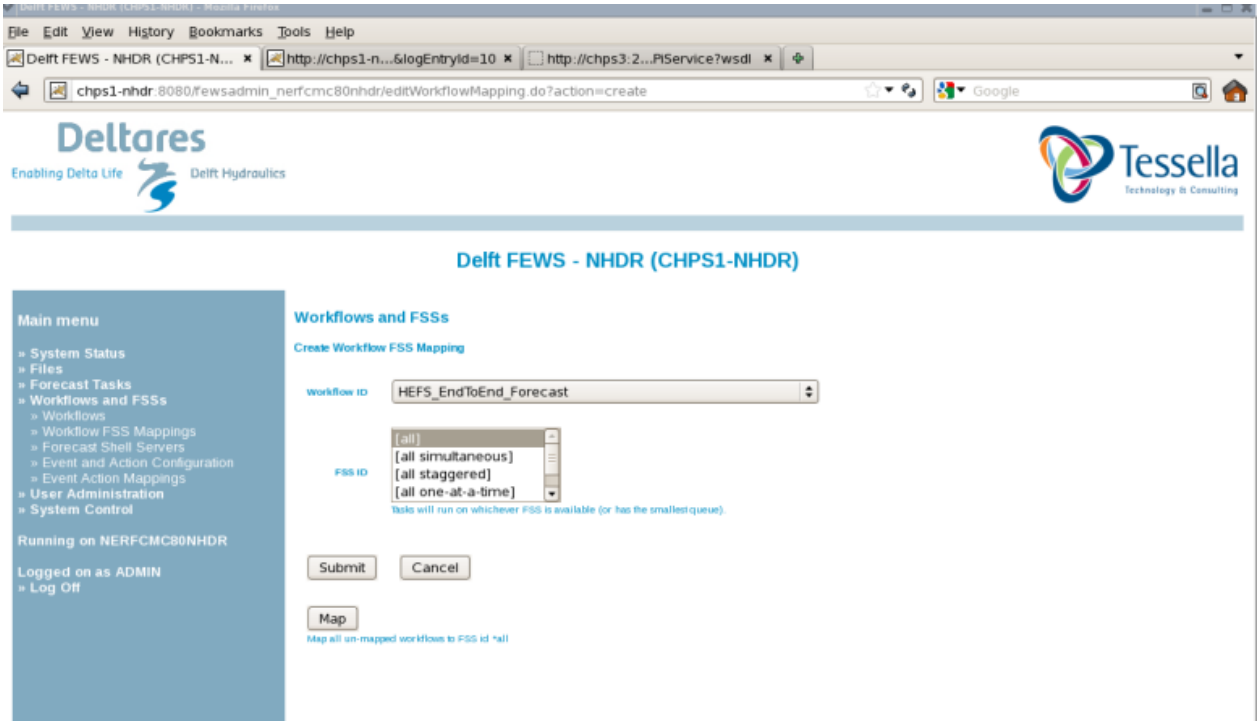
2.7 *Schedule Import Workflows (All Steps Required)*

The import workflows must be scheduled through the standard FEWS-AI mechanism. Screenshots for scheduling the default three workflows are provided in the following sections.

2.7.1 Add a workflow mapping for each workflow to schedule.

To add a workflow mapping for the Forecast Shell Servers, start the FEWS admin tool and do the following:

1. Click on “Workflows and FSSs”.
2. Click on “Workflows and FSS Mappings”.
3. Click on “Create New Workflow FSS Mapping”.
4. From the **workflow ID** list Choose the workflow with the desired id from the list provided.
5. From the **FSS ID** list, choose the default selection, “(all)”.
6. Click on the **Submit Button**.

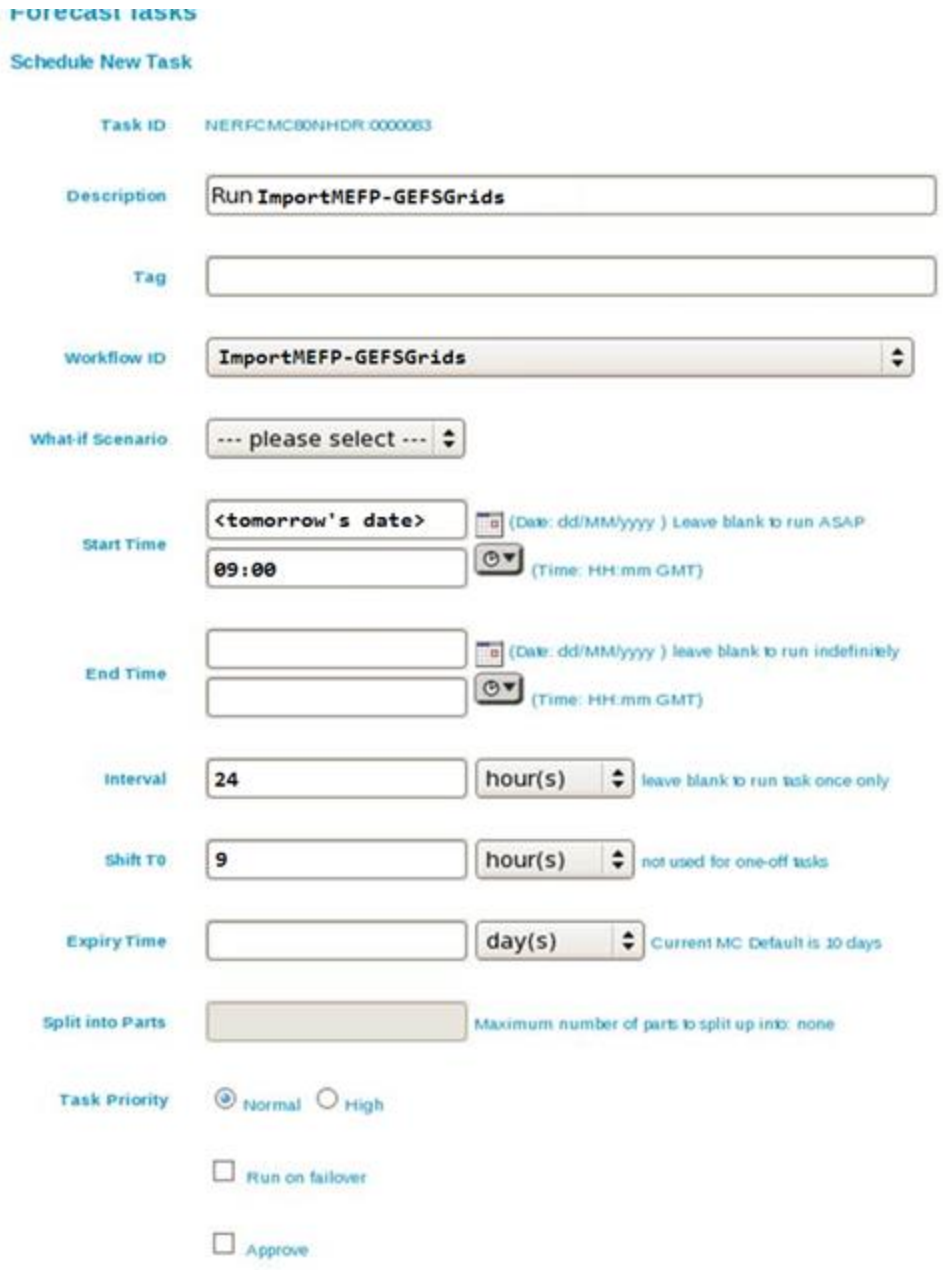


The following sections show how to repeat the above process for the two default workflows to import the default forcings grids: 1) ImportMEFP-GEFSGrids and 2) ImportMEFP-CFSv2Grids If any other forcings grids are to be used, their import workflows must be similarly added.

2.7.2 Schedule the ImportMEFP-GEFSGrids Workflow

By default, the scheduled workflow will execute once a day at 9 Z. This is one hour after the download script used to grab data from the NCEP http site is executed (i.e. 8 Z). The observation time (T0) is set to 0Z by shifting the time back 8 hours relative to the workflow execution time.

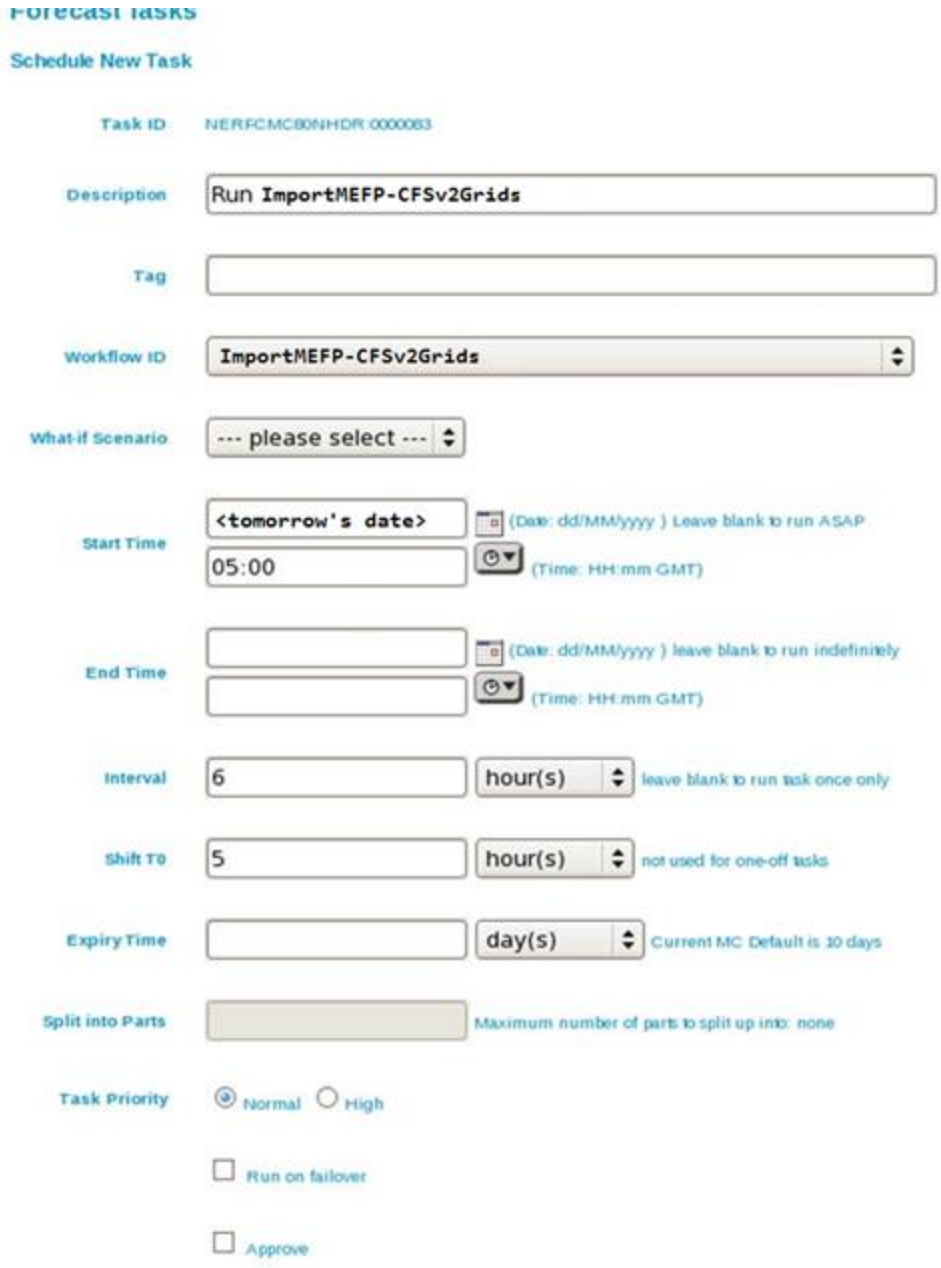
The **Expiry Time** field should be left blank, since it is defined, by default, within the workflow descriptors (see Steps 2.3.8 and 0).



2.7.3 Schedule the ImportMEFP-CFSv2Grids Workflow

The scheduled job will execute four times a day (5, 11, 17, and 23 Z). This is one hour after the download script used to grab data from the NCEP http site is executed (i.e. 4, 10, 16, and 22 Z). The observation time (T0) is set to 0, 6, 12, and 18Z respectively by shifting the time back 5 hours relative to the workflow execution time.

The **Expiry Time** field should be left blank, since it is defined, by default, within the workflow descriptors (see Steps 2.3.8 and 0).



2.8 *Confirm Grid Acquisition and Import*

The following steps should be performed 24-hours after performing Steps 2.6 and 2.7.

Action: To confirm the acquisition of the GRIB2 gridded forecast files, check that files with an appropriate date were created under the directories <*http_dir*>/GEFS and <*cfsv2_dir*>.

- The GEFS acquired files are always those associated with hour 0 Z.
- The CFSv2 files will always be 24-hours delayed, so that those acquired for a specific date will be labeled with the previous day.

Action: To confirm that the CFSv2 location-specific time series files were generated, look in the directory <*mefp_root_dir*>/cfsv2Interpolated/archive and confirm that subdirectories were created for the *configuration catchments* in Section 1.1.

Action: Open up an operator client with access to data imported via scheduled workflows. Use the **Database Viewer** to determine if the workflows scheduled in Step 2.7 executed and successfully imported the gridded forecast data.

For example, the GEFS import should appear as 6 database entries, 3 under the GEFS_Location, and 3 under the GEFS_USA_Location:

T0	Dispatch time	Workflow	What-if scenario	Descript...	FDO
02-01-2013 12:0...	02-12-2013 19:0...	ImportMEFP-GEFSGrids			wardj

moduleInst...	group	parameterId	locationId	locationNa...	x	y	timeSeries...	valueType	timeStep	externalFo...
2	2	3	2	2			1	1	1	2
ImportME...	Precip	FMAP	HEFS_GEFS	GEFS Loca...	0	0	external f...	grid	6 hour	01-31-2...
ImportME...	Temperat...	TFMN	HEFS_GEFS	GEFS Loca...	0	0	external f...	grid	6 hour	01-31-2...
ImportME...	Temperat...	TFMX	HEFS_GEFS	GEFS Loca...	0	0	external f...	grid	6 hour	01-31-2...
MEFP_GEF...	Precip	FMAP	HEFS_GEF...	GEFS_USA ...	0	0	external f...	grid	6 hour	01-31-2...
MEFP_GEF...	Temperat...	TFMX	HEFS_GEF...	GEFS_USA ...	0	0	external f...	grid	6 hour	01-31-2...
MEFP_GEF...	Temperat...	TFMN	HEFS_GEF...	GEFS_USA ...	0	0	external f...	grid	6 hour	01-31-2...

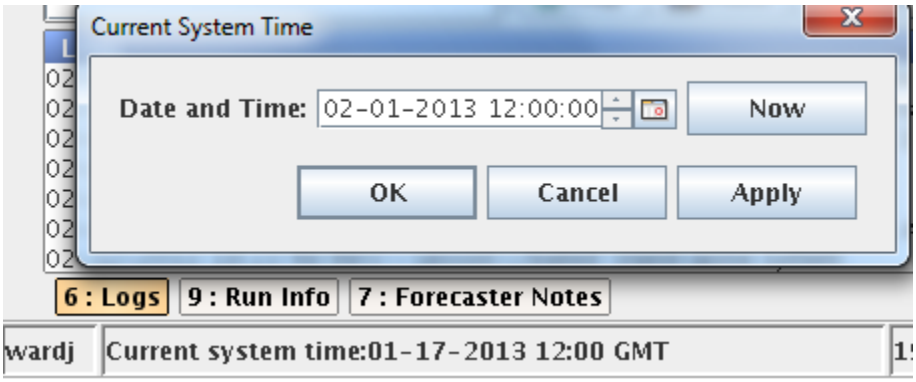
If the 3 GEFS_USA_Locations are missing,

T0	Dispatch time	Workflow	What-if scenario	Descript...	FDO
01-17-2013 12:0...	02-12-2013 19:0...	ImportMEFP-GEFSGrids			wardj

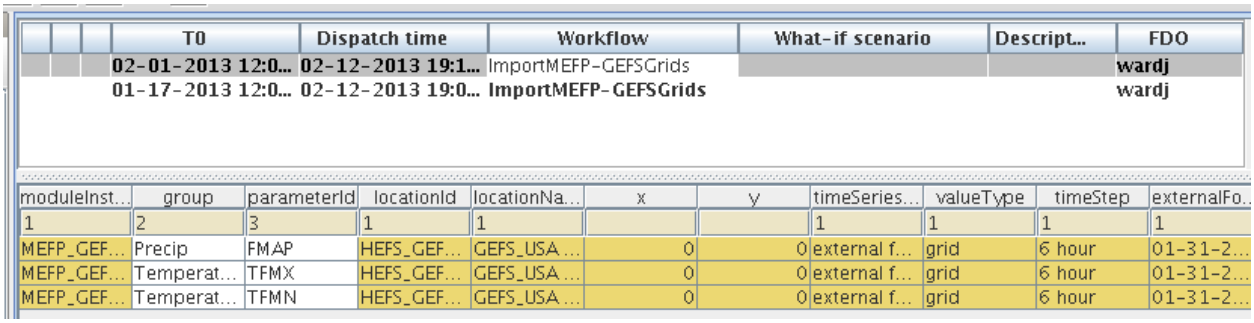
moduleInst...	group	parameterId	locationId	locationNa...	x	y	timeSeries...	valueType	timeStep	externalFo...
1	2	3	1	1			1	1	1	1
ImportME...	Precip	FMAP	HEFS_GEFS	GEFS Loca...	0	0	external f...	grid	6 hour	01-31-2...
ImportME...	Temperat...	TFMN	HEFS_GEFS	GEFS Loca...	0	0	external f...	grid	6 hour	01-31-2...
ImportME...	Temperat...	TFMX	HEFS_GEFS	GEFS Loca...	0	0	external f...	grid	6 hour	01-31-2...

then check that the day of the **Current system time** matches the import data day. The Current System Time is set in the lower left hand corner:

If the days do not match, click in the **Current system time** and set it to the import data day. Click **OK** when done:



Re-run the GEFS import workflow and the 3 GEFS_USA_Locations should appear:



TO	Dispatch time	Workflow	What-if scenario	Descript...	FDO
02-01-2013 12:0...	02-12-2013 19:1...	ImportMEFP-GEFSGrids			wardj
01-17-2013 12:0...	02-12-2013 19:0...	ImportMEFP-GEFSGrids			wardj

moduleInst...	group	parameterId	locationId	locationNa...	x	y	timeSeries...	valueType	timeStep	externalFo...
1	2	3	1	1			1	1	1	1
MEFP_GEF...	Precip	FMAP	HEFS_GEF...	GEFS_USA ...	0	0	external f...	grid	6 hour	01-31-2...
MEFP_GEF...	Temperat...	TFMX	HEFS_GEF...	GEFS_USA ...	0	0	external f...	grid	6 hour	01-31-2...
MEFP_GEF...	Temperat...	TFMN	HEFS_GEF...	GEFS_USA ...	0	0	external f...	grid	6 hour	01-31-2...

After all the imports are confirmed in the **Database Viewer**, repeat the steps in Section 2.4 starting with Step 16 to view the gridded forecasts via the **Spatial Display Panel** in CHPS.

TO ADD NEW SEGMENTS OR FORECAST GROUPS
After completing all other steps to add the new forecast group and/or segments, perform the second action above after waiting 24-hours to confirm that CFSv2 location-specific time series files were created for the new catchments.

2.9 *Setup Expiry Times*

Expiry times for all data generated as part of the data ingest process can be set within module configuration files, when scheduling a workflow, as part of the workflow descriptor, via an MC default, or via global properties; this list is in order of preference (e.g., a setting in a module configuration file is used by CHPS over a workflow descriptor setting). Within the default delivered configuration files, GEFS and CFSv2 gridded forecasts include explicitly defined default expiry times:

- The Imported GEFS and CFSv2 forecast world grids are temporary. This is set in the module configuration files

  <*configuration_dir*>/ModuleConfigFiles/hefs/importMEFP/ImportMEFP_*

- All other data generated during data ingest includes expiry times set via workflow descriptors; see Step 2.3.8 and the sample referred to therein.

CFSv2 grids are used immediately upon import to spatially interpolate time series for locations, which are then exported to the file system. GEFS grids are used soon after importing as part of the MEFP forecasting workflow; see *MEFP Configuration Guide: Forecast Components*. In both cases, 12-hours should be sufficient. However, if you want to review the grids sometime after import, a longer expiryTime may be desirable, but this may cause synchronization times between OCs and the central database to become prohibitively long.

If you want to define a different expiry time than that which is default, it is recommended you define the expiry with the workflow descriptor. Do the following:

Action: Determine what expiry time is desired for each output time series to be stored in the database (i.e., not temporary) within the following workflows:

<*configuration_dir*>/WorkflowFiles/hefs/…
ImportMEFP-CFSv2Grids.xml
ImportMEFP-GEFSGrids.xml

The default expiry times are explained above and defined within the module configuration files.

When determining the expiry time to use, you should consider how often MEFP forecasts will be generated and ensure that the latest GEFS grid is in the database at that time. Also, you should consider the size of the localDataStore and synchronization times. The default of 12 hours as chosen to satisfy these constraints based on experience at test RFCs.

Action: If the import world grids for GEFS and CFSv2 are to be non-temporary, then change the timeSeriesType to be "external forecasting" in the import module configuration files; see above for the names of the files.

Action: Define the default expiry times with the workflow descriptors. Open the file

<*configuration_dir*>/RegionConfigFiles/WorkflowDescriptors.xml

and modify the runExpiryTime XML element to the workflowDescriptor element appropriately for the workflows added in Step 2.3.8. For example, for a default of one day for the GEFS grids interpolated over the U.S., do the following:

```
…
<workflowDescriptor id="ImportMEFP-GEFSGrids" forecast="false"
    visible="true" name="ImportMEFP-GEFSGrids" allowApprove="false">
    <description>Import GEFS grids for MEFP the Import directory and delete the files
after importing</description>
    <runExpiryTime unit=”day” multiplier=”1”/>
</workflowDescriptor>
…
```

As always with CHPS, be sure that the change is synchronized to the central server.

3 Adding Segments and Forecast Groups

3.1 *Adding a New Segment*

To add a new segment for an existing forecast group, first identify the locationIds for any catchments for which MEFP must generate FMAP and FMAT forecast ensembles. Then, the actions described in the following sections must be repeated in order (see the **TO ADD NEW…** boxed descriptions in each section):

- Section 2.3.5 – Add the catchments to the location set defined for the forecast group.
- (Optional) Section 2.4 – Confirm that CFSv2 files are created for the ne segment (Step 7).
- Section 2.5 – Synchronize changes to the central server.
- Section 2.8 – Confirm that CFSv2 location-specific time series files are being generated for the new catchments.

3.2 *Adding a New Forecast Group*

To add a new forecast group:

- Identify the segments for which the MEFP will be executed within that group
- Identify the locationIds for any catchments used in those segments for which MEFP must generate FMAP and FMAT forecast ensembles.

The actions described in the following sections must be repeated in order (see the **TO ADD NEW…** boxed descriptions in each section):

- Section 2.3.1 – Create copies of an existing forecast group's module configuration directory and files.
- Section 2.3.2 – Modify the MEFP_CFSv2_Export workflow to execute the new forecast group's module.
- Section 2.3.5 – Add the catchments to the location set defined for the forecast group.
- Section 2.3.6 – Add the created module to the ModuleInstanceDescriptors.xml file.
- Section 2.5 – Synchronize changes to the central server.
- Section 2.8 – Confirm that CFSv2 location-specific time series files are being generated for all new catchments.

4 Adding non-12Z forecast times (T0s)

It may be desirable to execute the MEFP for T0s other than the default 12Z in order to take advantage of more recent forecast forcings (or observations). As evidence to support that, in May 2019, OWP completed a study ("*An evaluation of the MEFP using inputs, parameters, and outputs at various times of day and in different combinations*" available here), which found that "using more recent and, thus, more skillful operational QPF as input to the MEFP…will generally produce a more skillful MEFP forecast, even when the input forecast originates from a different time of day than the time at which the parameters were estimated…"

It is important to distinguish between parameter estimation of the MEFP for T0s other than 12Z (the default issue time) and the production of operational forecasts at times other than 12Z. For example, the MEFP parameters are estimated assuming a GEFSv10 0Z forecast will be used to generate an ensemble for a T0 of 12Z. Reforecasts are only available for GEFSv10 at 0Z, leading to this assumption. In practice, a streamflow forecast may be desirable for a different (or multiple) T0, say 18Z. If you use more different or more frequent times for forcings, you do not need to re-estimate the MEFP parameters.

MEFP QPF sources are RFC, WPC, and GEFSv10. In 2020, GEFSv12 will be added. GEFSv12 issues forecasts at the synoptic times of {0Z, 6Z, 12Z, 18Z}, so we will use it as an example. Similar steps can be done for the RFC and WPC {0Z, 12Z} forecast sources.

1. In Section 2.6.3, schedule 4 cronjobs, 6 hours apart, to download the data. They run 3 hours after the GEFSv12 forecast. The {0Z, 6Z, 12Z, 18Z} forecasts will be downloaded at {3Z, 9Z, 15Z, 21Z}:

   (Existing)
   ```
   00 03 * * * <http_dir>/scripts/gefs_data.sh 00 <http_dir>/GEFS
   <CHPS_import_system> <CHPS_import_dir>/GEFS > <http_dir>/logs/gefs_00zdata.log
   ```

   (Add)
   ```
   00 09 * * * <http_dir>/scripts/gefs_data.sh 06 <http_dir>/GEFS
   <CHPS_import_system> <CHPS_import_dir>/GEFS > <http_dir>/logs/gefs_06zdata.log
   00 15 * * * <http_dir>/scripts/gefs_data.sh 12 <http_dir>/GEFS
   <CHPS_import_system> <CHPS_import_dir>/GEFS > <http_dir>/logs/gefs_12zdata.log
   00 21 * * * <http_dir>/scripts/gefs_data.sh 18 <http_dir>/GEFS
   <CHPS_import_system> <CHPS_import_dir>/GEFS > <http_dir>/logs/gefs_18zdata.log
   ```

2. In Section 2.7.2, schedule runs of ImportMEFP-GEFSGrids to import the downloaded data into CHPS. These workflows should run 1 hour after download, or 4 hours after the GEFSv12 forecast. Add {0Z, 6Z, 12Z, 18Z} imports with a start time/shift T0s of {4Z,

10Z, 16Z, 22Z}.

3. In Section 2.8, Confirm Grid Acquisition and Import, for each synoptic time, {0Z, 6Z, 12Z, 18Z}, you should see 6 localDataStore entries = 3 for GEFS_Location + 3 for GEFS_USA_Location.

You should now be able to produce MEFP T0 ensembles at {12Z, 18Z, 0Z, 6Z}, followed by their streamflow forecasts.

5 Troubleshooting

5.1 *Imported Grids are Not Visible in the Database Viewer*

This problem occurs most often when confirming the configuration by importing test grids (see Section 2.4). If the import workflows appear to run without errors but no new entry is created in the **Database Viewer Panel** of the CHPS interface, then the most likely cause is that the same grids are being imported a second time in the CHPS database. If the same grids are imported multiple times, only the first import job will include an entry in the table of the **Database Viewer**. To see a new entry, restore the original localDataStore before the first import was done, or delete the localDataStore.

This may also indicate problems in the configuration of the import modules. Check the configuration against the instructions provided in Section 2. If no problems are found, report this as an issue via the usual means (VLAB Redmin).

5.2 *XML Format is Preferred for CFSv2 Time Series Files*

By default, all CFSv2 location specific time series files are exported in FastInfoset, .fi, format. That format is binary, making it so that the files are not human readable without first converting them using tools in the FEWS interface to XML format. If an ASCII XML format is preferred, make the changes described in the action below.

Making this change increases the amount of space required per location in the <*mefp_root_dir*> to approximately 55 MB per location (see Section 2.1).

Action: Open this file in your editor of choice:

<*configuration_dir*>/ModuleConfigFiles/hefs/<*fgroup*>/<*fgroup*>_MEFP_CFSv2_Export.xml

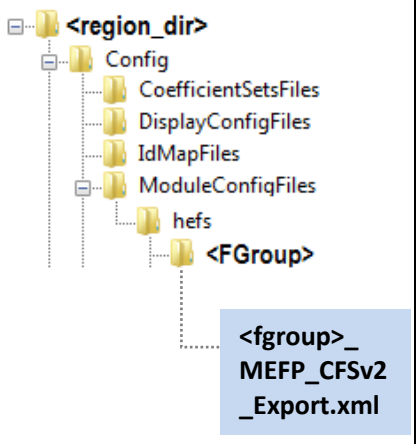
Change the "fileNamePattern" property value specified in the exportRunFileActivity element to end in .xml (highlighted in green):

```
<string key="fileNamePattern"
    value="@locationId@/@locationId@.@parameterId@.@forecastDateT0(yyyyMMddHH;Z)@.xml"/>
```

See the example below to see the change in the context of the exportRunFileActivity XML element within the file (the affected line is **bold**; some lines of XML are long so that it spans multiple lines in the text below).

Description: The TimeSeriesExporterModelAdapter determines the format of the file based on the extension. Changing it to "xml" will cause the adapter to output an ASCII XML file. The exported files will now be human readable, but the estimated space required per location will increase.

Standard Location: <*configuration_dir*>/**ModuleConfigFiles/hefs/**<*fgroup*>/	**Contents:** **<*fgroup*>_MEFP_CFSv2_Export.*xml***

Standard Location: <*configuration_dir*>/**ModuleConfigFiles/hefs/**<*fgroup*>/	**Contents:** <***fgroup***>**_MEFP_CFSv2_Export.*xml***
	<?xml version="1.0" encoding="UTF-8"?> <generalAdapterRun xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://fews.wldelft.nl/schemas/version1.0/generalAdapterRun.xsd"> … <exportRunFileActivity> <exportFile>%ROOT_DIR%/run_info.xml</exportFile> <properties> <!-- Valid arguments to put within '@' symbols are locationId, parameterId, ensembleId, handbook5Id, and the forecastDateT0 argument function which takes two parameters: date format and time zone. This uses standard Graphics Generator arguments syntax, so refer to its documentation for more information. --> <!-- DO NOT CHANGE THE FILE NAME: only the extension can be changed (either .xml or .fi is valid). The CFSv2LaggedEnsembleModelAdapter model assumes the file name matches this pattern. --> **<string key="fileNamePattern"** **value="@locationId@/@locationId@.@parameterId@.@forecastDateT0(yyyyMMddHH;Z)@.xml"/>** <!-- The base directory for output files. Subdirectories based on the file names are created as needed. --> <string key="exportDir" value="$MEFP_ROOT_DIR$/cfsv2Interpolated/archive"/> <!-- For CFSv2, the forecast time is part of the file name. That time must be computed from the data, as the forecast time CHPS associates with the time series when imported may not match the required time. This field instructs the TimeSeriesExportAdapter to compute the forecast time for a time series as being 6-hours BEFORE the time of the first data value, instead. --> <!-- DO NOT CHANGE THE FIELD BELOW! --> <int key="t0ComputationAdjustmentFactorFromFirstDataValue" value="-6"/> </properties> </exportRunFileActivity> … </generalAdapterRun>

5.3 *CFSv2 Location Specific Time Series Files Failed to Export*

Errors in executing CFSv2 location specific time series files are most often detected when executing CFSv2LaggedEnsembleModelAdapter which uses those files as input; see the *MEFP Configuration Guide: Forecast Components.* Specifically, when executing a module that runs that adapter, a log message similar to the following may be seen:

> Error executing model: Error building ensemble component list for ASEN6HUD: No acceptable first time series file was found in the archive directory with a time within 24 hours of 2013-03-26 12:00:00 Z for location ASEN6HUD and parameter FMAP.

Note that the system time (T0) of the module execution is in the error message, highlighted above. The catchment locationId is also noted in the error message and is highlighted. To determine the cause of the problem, check the following directory:

> <*mefp_root_dir*>/cfsv2Interpolated/archived/<*catchment*>

where <*catchment*> is the catchment locationId noted in the error message. List the files in that directory in reverse chronological order and include the last modified dates (i.e., ls –lrt). You may see something similar to the following:

```
-rw-r--r-- 1 fews fxalpha 17769 Mar 25 05:02 ASEN6HUD.TFMX.2013032400.fi
-rw-r--r-- 1 fews fxalpha 17658 Mar 25 05:02 ASEN6HUD.TFMN.2013032400.fi
-rw-r--r-- 1 fews fxalpha 17743 Mar 25 05:02 ASEN6HUD.FMAP.2013032400.fi
-rw-r--r-- 1 fews fxalpha 17713 Mar 25 11:02 ASEN6HUD.TFMX.2013032406.fi
-rw-r--r-- 1 fews fxalpha 17596 Mar 25 11:02 ASEN6HUD.TFMN.2013032406.fi
-rw-r--r-- 1 fews fxalpha 17521 Mar 25 11:02 ASEN6HUD.FMAP.2013032406.fi
-rw-r--r-- 1 fews fxalpha 17854 Mar 25 17:02 ASEN6HUD.TFMX.2013032412.fi
-rw-r--r-- 1 fews fxalpha 17734 Mar 25 17:02 ASEN6HUD.TFMN.2013032412.fi
-rw-r--r-- 1 fews fxalpha 17310 Mar 25 17:02 ASEN6HUD.FMAP.2013032412.fi
-rw-r--r-- 1 fews fxalpha 17741 Mar 25 23:02 ASEN6HUD.TFMX.2013032418.fi
-rw-r--r-- 1 fews fxalpha 17610 Mar 25 23:02 ASEN6HUD.TFMN.2013032418.fi
-rw-r--r-- 1 fews fxalpha 17638 Mar 25 23:02 ASEN6HUD.FMAP.2013032418.fi
-rw-r--r-- 1 fews fxalpha 17830 Mar 26 05:02 ASEN6HUD.TFMX.2013032500.fi
-rw-r--r-- 1 fews fxalpha 17783 Mar 26 05:02 ASEN6HUD.TFMN.2013032500.fi
-rw-r--r-- 1 fews fxalpha 17527 Mar 26 05:02 ASEN6HUD.FMAP.2013032500.fi
-rw-r--r-- 1 fews fxalpha 17702 Mar 26 17:00 ASEN6HUD.TFMX.2013032506.fi
-rw-r--r-- 1 fews fxalpha 17573 Mar 26 17:00 ASEN6HUD.TFMN.2013032506.fi
-rw-r--r-- 1 fews fxalpha 17882 Mar 26 17:00 ASEN6HUD.FMAP.2013032506.fi
```

You should see the following pattern:

- Files for hour 00Z (i.e., *00.fi) should be generated with a last modified time of 05:00 Z (or shortly thereafter) on the next day.
- Files for hour 06Z should have time 11:00Z (or shortly thereafter) on the next day.
- Files for hour 12Z should have time 17:00Z (or shortly thereafter) on the next day.
- Files for hour 18Z should have time 23:00Z (or shortly thereafter) on the next day.

Note the lines highlighted above: the files are for 06Z but have the time 17:00Z. When this occurs, it likely indicates that the scheduled workflow execution for the preceding time (11:00Z) failed, so that no grids were imported. Then, at 17:00Z, both the 06Z and 12Z CFSv2 grids require processing, but CHPS only indicates that the earlier grid was processed, those at 06Z. Hence, the grids for 12Z were not properly processed. Other possible errors include the import succeeding, by export failing. In that case, the last modified times for all files will be correct, but some files for a specific time will be missing.

In any case, the fix is to manually execute the CFSv2 import workflow using any OC or SA that has the proper MEFP_ROOT_DIR global property setup. The files to import can be found in the directory <*http_dir*>/CFSv2 (see Section 2.6.1 for the value of <*http_dir*>), which contains an archive of 30-days of data. The files to import for a given date, denoted <*yyyymmdd*>, are stored in a tar file:

cfs.<*yyyymmdd*>.tgz

The contents of a tar package will be as follows:

cfs.<*yyyymmdd*>/…
<*hh*>/…
time_grib_01/
time_grib_01/prate.01.<*yyyymmdd*><*hh*>.daily.grb2
time_grib_01/tmin.01.<*yyyymmdd*><*hh*>.daily.grb2
time_grib_01/tmax.01.<*yyyymmdd*><*hh*>.daily.grb2
time_grib_01/prate.01.<*yyyymmdd*><*hh*>.daily.grb2.idx
time_grib_01/tmin.01.<*yyyymmdd*><*hh*>.daily.grb2.idx
time_grib_01/tmax.01.<*yyyymmdd*><*hh*>.daily.grb2.idx

where <*hh*> indicates the hour of the files and is 00, 06, 12, or 18.

Action: Untar the *.grb2 files for the appropriate hour to the appropriate import directory:

cd <*CHPS_import_dir*>/CFSv2
tar –zxvf <*http_dir*>/CFSv2/ cfs.<*yyyymmdd*>.tgz cfs.<*yyyymmdd*>/<*hh*>/time_grib_01/*.grb2
mv cfs.<*yyyymmdd*>/<*hh*>/time_grib_01/*.grb2 .
rm –rf cfs.<*yyyymmdd*>

(See Section 2.6.1 for the value of <*CHPS_import_dir*>.)

Action: Start a CHPS session configured to run the HEFS data ingest components and use the default import directory, <*CHPS_import_dir*>, for importing. Set the system time to match the date and hour of the data to import: <*yyyymmdd*> and <*hh*>. Using the **Manual Forecast** Dialog, execute the workflow ImportMEFP-CFSv2Grids.